NS-AUA 2023 Annual Meeting Abstracts – Endourology, Stones

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Abstract 66

Efficacy and safety of lumasiran for infants and young children with primary hyperoxaluria type 1: 30-month analysis of the phase 3 ILLUMINATE-B trial

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Introduction: Primary hyperoxaluria type 1 (PH1) is a genetic disorder resulting in excess hepatic oxalate production, which can lead to urolithiasis, systemic oxalosis, nephrocalcinosis (NC), and ultimately, chronic kidney disease/kidney failure.[1] Lumasiran, a liver-directed RNA interference therapeutic that reduces urinary oxalate (UOx) levels, demonstrated sustained efficacy with an acceptable safety profile over 12 months in infants and young children aged <6 years with PH1 participating in ILLUMINATE-B (NCT03905694).[2] Our objective was to evaluate outcomes of lumasiran treatment through Month 30 of ILLUMINATE-B.

Methods: ILLUMINATE-B is an ongoing, phase 3, multinational, open-label, single-arm study. Eligible patients had a confirmed PH1 diagnosis, were <6 years old at study entry, had an eGFR >45 mL/min/1.73m^2 if ≥12 months old or normal serum creatinine if <12 months old, and UOx:creatinine (Cr) ratio greater than upper limit of normal. A primary analysis was conducted at six months; patients are now in an extension period of up to 54 months. Changes in NC and kidney stone event rates were exploratory endpoints.

Results: All 18 patients enrolled in ILLUMINATE-B entered the extension period and remain in the study. At month 30, the mean percent reduction from baseline in spot UOx:Cr ratio with lumasiran treatment was 76%. Mean percent reduction in plasma oxalate was 42% from baseline to month 30. eGFR remained relatively stable through month 30. In 14 patients with NC at baseline, NC grade improved in 86% (12/14) at month 24; no patient worsened. Of the four patients with no baseline NC, all remained stable at month 24. Kidney stone event rates remained low through month 30. The most common lumasiran-related adverse events were mild, transient injection-site reactions (three patients [17%]).

Conclusions: In infants and young children with PH1, lumasiran treatment resulted in sustained reductions in urinary and plasma oxalate through month 30, with an acceptable safety profile. Previous observations of stable kidney function and low kidney stone event rates were maintained through month 30, while improvements in NC grade were maintained through month 24.

Funding: Alnylam Pharmaceuticals

References

1. Cochat P, Rumsby G. Primary hyperoxaluria. *N Engl J Med* 2013;369:649-58. https://doi.org/10.1056/NEJMra1301564
2. Hayes W, Sas DJ, Magen D, et al. Efficacy and safety of lumasiran for infants and young children with primary hyperoxaluria type 1: 12-month analysis of the phase 3 ILLUMINATE-B trial. *Pediatr Nephrol* 2023;38:1075-86. https://doi.org/10.1007/s00467-022-05684-1

Abstract 67

Stigma in stone disease: Recurrent stone formers experience more self-blame than first-time stone formers

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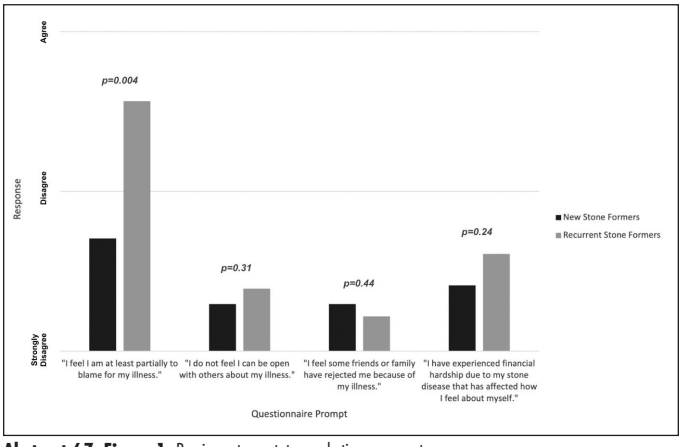
Introduction: Stigma can affect how patients engage in care, and it is a modifiable risk factor that impacts long-term outcomes in many diseases. The nature of stigma associated with kidney stone disease has not been studied. We conducted an interview-based prospective cohort study to characterize stigma in first-time and recurrent kidney stone patients.

Methods: A randomly selected cohort of adult stone formers was identified from the Registry for Stones of the Kidney and Ureter (ReSKU). A validated stigma questionnaire was conducted by telephone. Domains of care assessed in this survey included stigmas relating to nephrolithiasis diagnosis and management, quality of life, and financial burden. A larger, randomly selected cohort of 285 nephrolithiasis patients was also analyzed to examine medication and diet regimen adherence. Statistical techniques and ANOVA analyses were used.

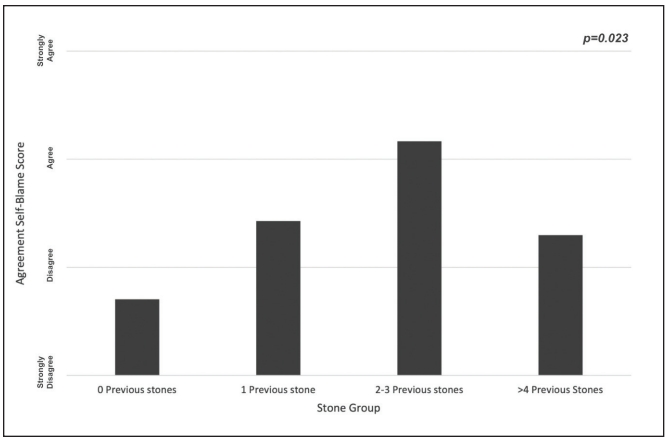
Results: We collected survey-interview data from 40 subjects, of which 17 patients were classified as first-time stone formers and 23 patients were recurrent stone formers (Table 1). Stigma was observed notably as self-blame rather than externally sourced, and recurrent stone formers reported more self-blame than first-time stone formers (ANOVA, p=0.004) (Figure 1). When stratified by the number of prior stone events, subjects with two to three prior stone events were observed to experience the highest degree of self-blame (ANOVA, p=0.023) (Figure 2). Quality of life and financial factors did not significantly impact self-blame stigma. Analysis of a larger cohort of 285 patients from the ReSKU database found significantly lower medication adherence in recurrent stone formers (p=0.018).

Conclusions: Self-blame is the predominant type of stigma experienced in stone disease, particularly in recurrent stone formers. While more studies are needed to characterize the relationship between stigma and adherence to stone prevention measures, urologists should be attentive to this psychosocial aspect when managing recurrent stone formers.

Funding: Harold Williams M.D. Summer Research Fellowship



Abstract 67. Figure 1. Previous stone status and stigma prompt response.



Abstract 67. Figure 2. Self-blame score stratified by stone recurrences.

Abstract 67. Table 1. Characteristics of 40 surveyed patients presenting with kidney stones at University of California, San Francisco

Patient characteristics	Surveyed patients (n=40)
Sex, n (%)	
Male	26 (65.0%)
Female	14 (35.0%)
Age, median [IQR]	56.9 [40.0–63.6]
Race/ethnicity, n (%)	
White	30 (75.0%)
AAPI	3 (7.5%)
Hispanic	3 (7.5%)
Middle Eastern	2 (5.0%)
Unknown	2 (5.0%)
Education level, n (%)	
High school	2 (5.0%)
College	23 (57.5%)
Graduate school	11 (27.5%)
Missing	4 (10.0%)
BMI, median [IQR]	25.2 [23.8–29.1]
Comorbidities, n (%)	
HTN	9 (22.5%)
CKD	3 (7.5%)
DM	2 (5.0%)
Previous stone events, n (%)	
>4	10 (25.0%)
1-3	13 (32.5%)
None	16 (40.0%)
Missing	1 (2.5%)

Abstract 68

Utility of routine lab work after transurethral resection of prostate

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Introduction: Transurethral resection of the prostate (TURP) is a one of the most common urologic procedures performed worldwide. Postoperative complications following TURP are not common but typically include blood loss, ureteric obstruction, and TURP syndrome. At our center, we perform routine postoperative day one (POD1) lab work. Since many decisions post-TURP are made clinically, it is unclear if laboratory evaluation is useful. Here, we aim to evaluate the role of lab work in predicting a change in patient management.

Methods: We performed a retrospective chart review of patients who underwent elective TURP between 2018 and 2020. We collected preoperative, operative, and postoperate data on included patients. We used logistic regression to evaluate the use of a clinical factors and laboratory values in affecting post operative outcomes. Outcomes evaluated included fluid resuscitation, antibiotic use, transfusions, and continuing bladder irrigation.

Results: A total of 109 patients underwent elective TURP during the study period. Demographic data is listed in Table 1. Hemoglobin decreased by a mean 14.6 g/L (SD 9.2), leukocytes increased by a mean 2.5 x 10^9/L (SD 4.0), and serum creatinine decreased by a mean 7.2 µmol/L (SD 15.7) on POD1. There was no statistically significant trend between change in hemoglobin on POD1 and need for transfusion during admission (OR 1.12, 95% CI 0.92, 1.37). Fever had a significant relationship with use of antibiotics (OR 1.5, 95% CI 1.15, 1014), whereas leukocytosis did not. Tachycardia was predictive of requiring fluid resuscitation (OR 66.7, 95% CI 5.12, 1712). Degree of hematuria was associated with continuing bladder irrigation (OR 2.02, 95% CI 1.13, 4.03). There was no significant

Abstract 68. Table 1. Patient demographics

Variable	Number of patients (%), (n=109)
Age (years, SD)	70.6±7.5
Preoperative medication use	
5-ARI	32 (29.4)
Antiplatelets	35 (32.1)
Anticoagulants	8 (7.3)
Past medical history	
Previous TURP	24 (22)
Previous prostate radiation	2 (1.8)
Cardiac history (MI, CHF)	22 (20.2)
ASA score	
1	3 (2.8)
2	30 (27.5)
3	59 (54.1)
4	16 (14.7)
TURP indication	
Lower urinary tract symptoms	77 (70.6)
Urinary retention	13 (11.9)
Hematuria	7 (6.4)
Other (abscess, biopsy)	12 (11.0)

relationship between electrolyte changes or creatinine with any outcome variable.
Conclusions: In this single-center study, POD1 lab work was not associated with change in management for patients undergoing TURP. Clinical outcomes such as fever, tachycardia, and degree of hematuria were, in fact, associated with change in management. Routine POD1 lab work is likely not beneficial for most TURPs, as clinical factors, such as vitals, better predict management outcomes.

Abstract 69

Aquablation for benign prostatic hyperplasia in large prostates (80–150 ml): Final five-year results

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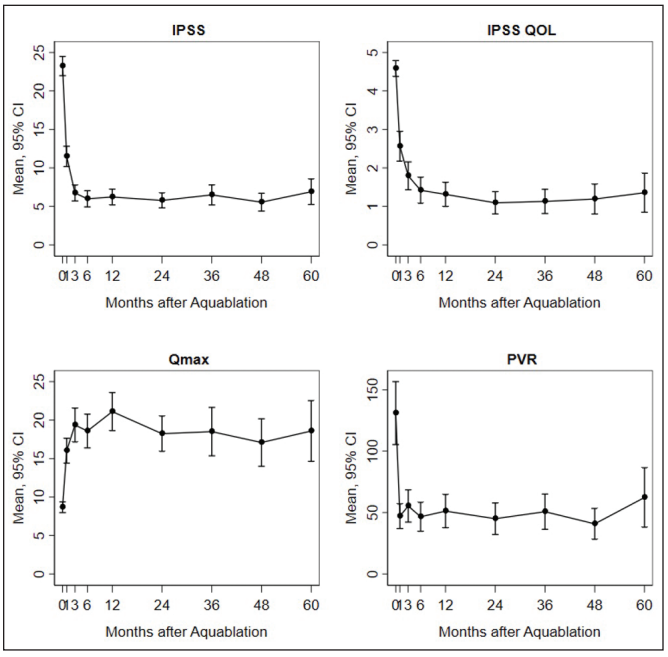
Introduction: We aimed to report five-year safety and efficacy outcomes of the Aquablation procedure for the treatment of men with symptomatic benign prostatic hyperplasia (BPH) and large-volume prostate glands.
Methods: A total of 101 men with moderate-to-severe BPH symptoms and prostate volumes between 80–150 mL underwent a robotic-assisted Aquablation procedure in a prospective, multicenter, international trial. Herein, we report the final five-year results.
Results: The study successfully met its safety and efficacy performance goal, which was based on TURP outcomes typically done in smaller prostates, at three months. Mean prostate volume was 107 mL (range 80–150 mL). Mean operative time (TRUS in to catheter in) was 55 minutes (range 24–111 minutes), and mean Aquablation resection time was eight minutes (range 2.5–17 minutes). Most (89%) adverse events were low-grade, defined as either non-procedure-related or Clavien-Dindo grade 2 or less. There was no reported de novo erectile dysfunction and 15% of patients developed ejaculatory dysfunction. The TRUS results showed a 42% reduction in prostate volume at three months, which aligned to the 44% reduction in serum PSA at six months. At five years, IPSS scores improved from 23.2 at baseline to 6.9, and Qmax improved from 8.7 cc/sec at baseline to 18.6 cc/sec. Improvements in both IPSS, IPSS quality of life, Qmax, and PVR were immediate ($p<0.0001$) and sustained ($p<0.0001$) throughout the followup period (Figure 1). The annualized retreatment rate was less than 1% per year.
Conclusions: At five years of prospective followup, the Aquablation procedure was shown to be safe and effective in men with large prostates (80–150 mL).
ClinicalTrials.gov number, NCT03123250



Abstract 69. Figure 1. Five-year efficacy outcomes following Aquablation in large prostates.

Abstract 70

Lower patient-reported kidney stone-related quality of life for non-White races

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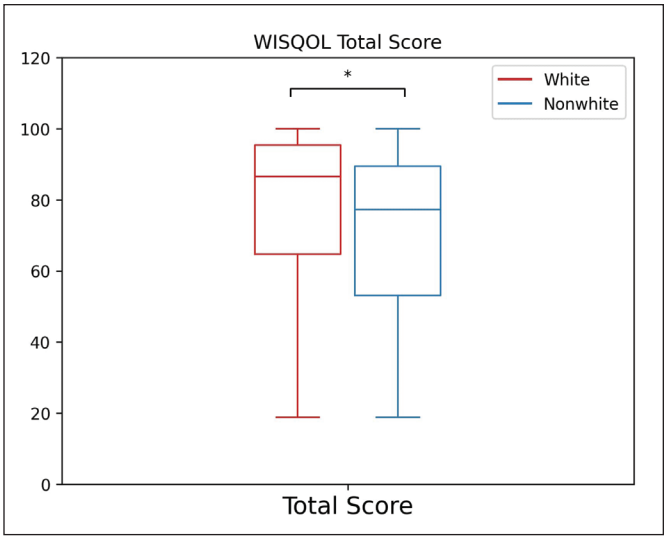
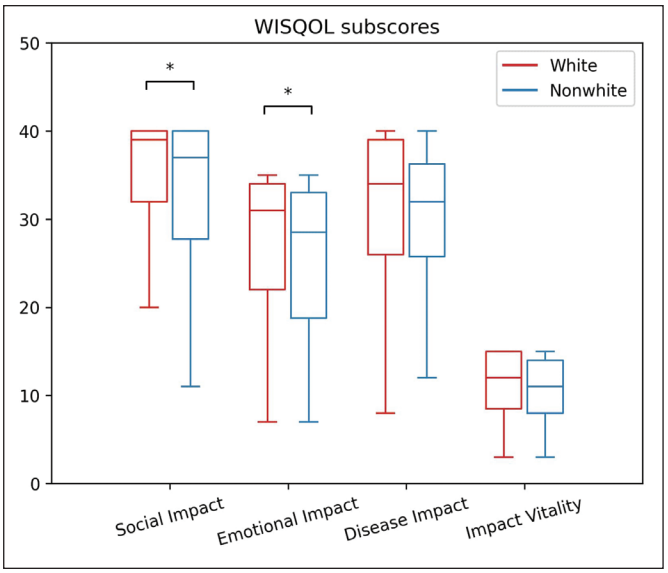
Introduction: Kidney stones are common and contribute to significant burdens on health-related quality of life. This study aimed to use the Wisconsin Stone Quality of Life Questionnaire (WISQOL), a disease-specific, validated questionnaire, to understand the association between patient reported quality of life and race among kidney stone formers.
Methods: This was a single-institution, retrospective review of 815 new urolithiasis patients who completed the (WISQOL) on presentation to a kidney stone clinic between January 16, 2019, and December 5, 2022. The primary outcome was (WISQOL) total score; secondary outcomes were (WISQOL) subdomains. Statistical analysis was comprised of two-sample t-tests.
Results: Of the 815 patients, 759 patients reported their race as White, and 56 reported their race as non-White. For the (WISQOL) total score, non-White patients had significantly lower scores (non-White m=70.44, White m=77.02, p=0.042). Among the (WISQOL) domains scores, non-White patients had significantly lower scores in Social Impact Total (non-White m=32.36, White m=34.86; p=0.025) and Emotional Impact Total (non-White m=25.14, White m=27.44, p=0.044). Disease Impact Score (non-White m=30.16, White m=31.53, p=0.24), and Impact Vitality Score (non-White m=10.41, White=11.26, p=0.11) were not significantly different.
Conclusions: Non-White race was associated with lower kidney stone related quality of life among new patients at a kidney stone clinic. Socioeconomic factors, including race, may impact patient experience and management in those with kidney stones.



Abstract 70. Figure 1. WISQOL total score between White (n=759) and non-White (n=56) race. *p<0.05 with t-test.



Abstract 70. Figure 2. WISQOL subscores between White (n=759) and non-White (n=56) race. *p<0.05 with t-test.

Abstract 71

Turning up the heat: Laser lithotripsy simulation of the Moses 2.0 holmium laser in an anatomic pelvicalyceal model

Christopher Wanderling[1], *Aaron Saxton*[1], *Dennis Phan*[1], *Karen Doersch*[1], *Lauren Shepard*[1], *Nathan Schuler*[1], *Timothy Campbell*[1], *Stephen Hassig*[1], *Scott Quarrier*[1], *Ahmed Ghazi*[2]

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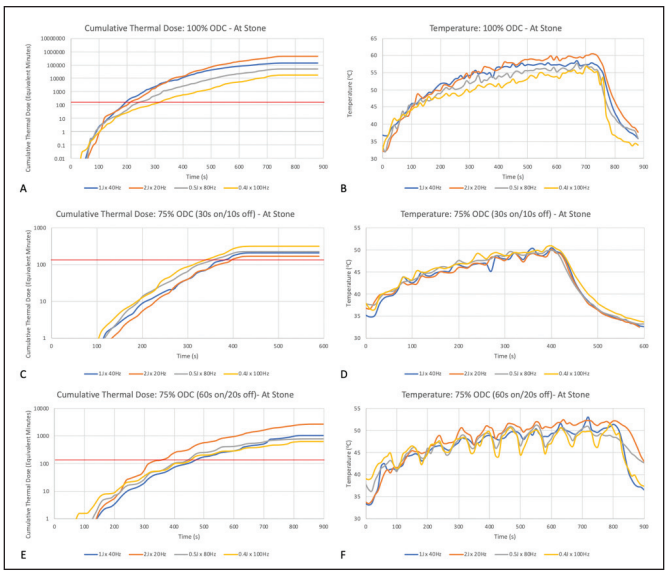
Introduction: Urologists have been able to treat urinary calculi more efficiently by increasing the energy delivered to calculi with higher-powered lasers. As power increases, so does temperatures generated during laser lithotripsy. Thermal dose is an important measure of thermal load. The threshold of thermal injury is when tissue damage occurs and is a standard measure for tissue denaturation, occurring when TD_{43} >120 equivalent minutes. The aim of this study was to evaluate the thermal dose and temperatures generated with four laser settings at a standardized power in a high-fidelity, anatomic pelvicalyceal (PCS) model.

Methods: We used high-fidelity, 3D-printed hydrogel models of a PCS submerged in a water bath sustained at body temperature (37.5±1.5°C). Ureteroscopic laser lithotripsy was performed with the Moses 2.0 holmium laser of a synthetic BegoStone implanted in the renal pelvis. At a standard power (40 W) and irrigation pressure (10 0cm H_2O = 17.8 ml/min), we evaluated operator three duty cycle (ODC) variations with different time-on intervals at four different laser settings. Temperature was measured at two separate locations — at the stone and ureteropelvic junction — in real time. Thermal dose was calculated with the Sapareto and Dewey formula. Statistics were completed for thermal dose with area under the curve and Kruskal-Wallis comparison; and for temperature with linear regression in third-order polynomial.

Results: The threshold of thermal injury was reached for 100% and 75% ODCs at the stone and UPJ for each laser setting at the stone and UPJ and was typically reached faster at the stone. Greater cumulative thermal doses and maximal temperatures were achieved with greater ODCs and longer laser activation periods and were typically greater at the stone compared to the UPJ. Although there was no general trend, there were statistically significant differences for the cumulative thermal doses and temperature profiles of the laser settings evaluated (Table 1).

Conclusions: Laser energy and frequency play an important role in the thermal loads delivered during laser lithotripsy. Urologists must perform laser lithotripsy diligently when aggressively treating large renal pelvis stones, as dangerous temperatures can be reached. To reduce the risk of causing thermal tissue injury, urologists should consider reducing their operator duty cycle and laser on time.



Abstract 71. Figure 1.

Abstract 72

Comparison of patient satisfaction between in-person and telehealth modalities for nephrolithiasis nutritional counseling

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Introduction: Prior to the COVID-19 pandemic, telehealth emerged as a promising frontier in patient care delivery for health systems, offering benefits such as increased patient access, reduced staffing costs, and improved provider efficiency. Following March 2020 and during the pandemic, the use of telehealth skyrocketed, increasing 251%. Virtual visits provided a way to minimize exposure risk and overcome barriers to care like transportation, child-care, and work schedules. However, the extent of patient satisfaction with telehealth visits remains unclear, especially in various specialties like urology. This study aimed to assess patient-perceived quality and satisfaction with virtual versus in-person visits during dietary management consultations for nephrolithiasis.

Methods: Between May 2019 and February 2021, 96 patients previously diagnosed with nephrolithiasis underwent an initial, in-person nutrition consultation. Subsequently, followup visits with a dietician were randomly assigned to either in-person or telehealth formats. Patient satisfaction after telehealth visits was evaluated using the Telemedicine Satisfaction Questionnaire (TSQ), using a five-point Likert scale. For patients who completed in-person visits, satisfaction was assessed with an eight-question modified TSQ, excluding technology-related questions.

Results: Of the 96 patients, 50 were randomized to in-person followup visits and 46 to virtual followup visits. In the virtual followup group, over 90% "Agreed" or "Strongly agreed" that they were satisfied with the quality of service provided through telemedicine. Moreover, greater than 82% expressed the intention to use telemedicine services again. There was no significant difference in patient satisfaction with clarity, comfort of communication, and attention received between telemedicine and face-to-face visits. Additionally, 67% of patients in the telemedicine group reported improved access to healthcare services and saved time, while 89% reported independence in accessing the telehealth system without assistance.

Conclusions: This study supports telemedicine as a successful alternative for followup care in patients undergoing nutritional counselling for stone prevention in the urology office, while maintaining both the quality of care and patient satisfaction. Future studies should explore the applicability of telehealth for managing other urologic conditions and identify those that might be better suited for in-person management.

Abstract 71. Table 1. Comparison of cumulative thermal dose (with statistical comparison), time to TD43, and maximal temperature (with statistical comparison) at the stone vs. away from stone

Laser setting	ODC	Time on (s)/ Time off (s)	Cumulative Thermal Dose		Time to Thermal		P At vs. Away from Stone	Maximum Temperature (*C)		P At vs. Away from Stone
			At Stone	Away from Stone	At stone	Away from Stone		At Stone	Away from Stone	
1J x 40Hz	100%		93909.8907	134501.2717	200	195	<0.0001	58.5	58.2	<0.0001
	75%	30/10	221.638771	206.1101383	380	370	<0.0001	50.4	50.2	<0.0001
		60/20	1125.62778	1025.910058	440	465	<0.0001	52.9	51.6	0.1618
	50%	30/30	3.56946718	3.071237613	NR	NR	<0.0001	44.1	43.1	0.0018
		60/60	3.23397083	1.882688132	NR	NR	<0.0001	42.8	43.3	0.1187
2J x 20Hz	100%		318276.667	449089.338	195	205	<0.0001	60.5	59.9	<0.0001
	75%	30/10	187.32621	169.9063665	395	395	0.0004	50.1	50.1	<0.0001
		60/20	3398.56969	2690.290273	325	330	<0.0001	52.4	52.7	0.0224
	50%	30/30	51.7586144	39.50125173	NR	NR	<0.0001	47.9	48.8	0.1638
		60/60	24.8602111	18.09596256	NR	NR	<0.0001	44.8	45.3	0.0301
0.5J x 80Hz	100%		62134.7335	51936.32456	230	230	<0.0001	57.8	57.6	<0.0001
	75%	30/10	344.605761	228.1060048	320	350	<0.0001	49.9	50.8	<0.0001
		60/20	1253.58893	788.0238063	395	435	<0.0001	51.2	52.1	0.0014
	50%	30/30	11.2033636	7.050187058	NR	NR	<0.0001	45.2	44.4	<0.0001
		60/60	23.6207136	9.677738417	NR	NR	<0.0001	46.9	45.1	<0.0001
0.4J x 100Hz	100%		18045.0153	8502.241086	295	315	<0.0001	56.7	55.3	<0.0001
	75%	30/10	316.269482	242.2321829	330	380	<0.0001	50.8	49.9	<0.0001
		60/20	739.832063	627.1075826	410	450	<0.0001	51.4	51.0	<0.0001
	50%	30/30	3.07123761	3.569467179	NR	NR	<0.0001	44.4	43.8	<0.0001
		60/60	18.9338393	17.0028632	NR	NR	<0.0001	46.7	45.2	<0.0001

Highlighted cells indicate test that exceeded threshold of thermal injury. NR indicates that the threshold of thermal injury was not reached. Statistics comparing cumulative thermal dose and calculated with Kruskal-Wallis Statistics comparing temperature curves and calculated with non-linear regression in a third-order polynomial.

Abstract 72. Table 1

	Telemedicine, N (%)	Face-To-Face N (%)	p-value
N	46	50	
Age, Mean ± SD	55.5 ± 14.6	59.6 ± 13.4	0.16
Gender			0.016
Female	15 (32.61)	29 (58)	
Male	30 (65.22)	19 (38)	
Prefer Not to Answer	1 (2.17)	2 (4)	
Ethnicity			0.856
Caucasian	39 (84.78)	42 (84)	
African American	3 (6.52)	3 (6)	
Other	4 (8.7)	5 (10)	
I can easily talk to my nutrition provider*	45 (97.83)	48 (96)	1.000
I can hear my nutrition provider clearly*	45 (97.83)	48 (96)	1.000
My nutrition provider is able to understand my healthcare condition*	45 (97.83)	48 (96)	1.000
I feel comfortable communicating with my nutrition provider*	43 (93.48)	47 (94)	1.000
I receive adequate attention from my nutrition provider*	44 (95.65)	48 (96)	1.000
I can see my nutrition provider as if we met in person*	45 (97.83)	N/A	
I do not need assistance while using the system*	41 (89.13)	N/A	
I think the healthcare provided through telemedicine is consistent*	42 (91.3)	N/A	
I obtain better access to healthcare services by use of telemedicine*	31 (67.39)	N/A	
Telemedicine saves me time traveling to hospital or a specialist clinic*	37 (80.43)	N/A	
Telemedicine meets my healthcare needs*	41 (89.13)	N/A	
I find telemedicine an acceptable way to receive healthcare services*	39 (84.78)	N/A	
I will use telemedicine services again*	38 (82.61)	N/A	
Overall, I am satisfied with the quality of service being provided by telemedicine*	43 (93.48)	N/A	

* Corresponding N (%) represent responses of Agree/Strongly Agree

Abstract 73 - WITHDRAWN

Abstract 74

Impact of 5-alpha reductase inhibitors on perioperative holmium enucleation of the prostate outcomes

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Introduction: Conflicting data exists as to whether 5-alpha reductase inhibitors (5-ARIs) improve perioperative outcomes in holmium enucleation of the prostate (HoLEP) by decreasing bleeding rates and improving enucleation times, or if they increase surgical difficulty during enucleation due to plane distortion and stromal changes. The purpose of this study was to evaluate the impact of 5-ARIs on perioperative HoLEP outcomes.

Methods: A total of 182 patients who underwent HoLEP at a single institution with two surgeons from November 2020 to March 2023 were included in our retrospective analysis. Our HoLEPs used Moses 2.0 laser (Boston Scientific) and the Piranha enucleation system (Richard Wolf). We evaluated the impact of 5-ARIs preoperatively on clinically significant postoperative hematuria (clot retention, prolonged stay postoperatively due to hematuria, or postoperative outpatient calls with hematuria concerns) and enucleation time. Statistical analysis was performed in R (R-Project). Generalized linear modeling was used to evaluate impact of finasteride on postoperative hematuria and enucleation time with correction for predetermined factors (age, prostate size, anticoagulation/antiplatelet use, finding of prostate cancer in specimen, and operative time [used for hematuria only]).

Results: Preoperative 5-ARIs had no impact on postoperative hematuria when corrected for the aforementioned predetermined factors on either univariable (p=0.34) or multivariable (p=0.51) analysis. Similarly, intraoperative enucleation time (p>0.99) was not affected by preoperative 5-ARIs.

Conclusions: We did not identify any differences in perioperative HoLEP outcomes in patients taking preoperative 5-ARIs when compared to controls. Overall, 5-ARIs do not seem to significantly decrease clinically significant postoperative hematuria or improve operative times for HOLEP, suggesting that surgical treatment should not be delayed for administration of 5-ARIs.

Abstract 74. Table 1

Variable	Univariable			Multivariable		
	OR	95% CI	p	OR	95% CI	p
Finasteride	1.42	0.68–2.93	0.34	1.30	0.59–2.79	0.51

Abstract 75

Enhanced recovery after percutaneous nephrolithotomy with an erector spinae plane block and opioid minimization: Our initial experience

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Introduction: Optimizing analgesia after a percutaneous nephrolithotomy (PCNL) is not standardized. At our institution, we instated an enhanced recovery after surgery (ERAS) pathway centered on a preoperative erector spinae plane (ESP) block to improve pain control postoperatively and minimize opioid consumption.

Methods: In association with the Department of Anesthesiology, an ERAS pathway was created for patients undergoing PCNL. This pathway involved a preoperative ESP block and the replacement of opioids with multimodal analgesia postoperatively. After IRB approval, patient charts were retrospectively reviewed and placed into two cohorts: one cohort participated in the ERAS pathway while the other did not and received traditional pain control. Opioids were available for patients in the ERAS group if their pain was not controlled. Patients were excluded if there was a significant intraoperative complication requiring surgical intervention, currently on opioid analgesics, or unable to receive a preoperative block. Data collected included baseline demographics, morphine equivalents (MEs) received postoperatively, nursing pain scores, if an opioid was prescribed for home, and the need for any refills. Descriptive statistics were performed by unpaired Student t-test and Fisher's exact test for continuous and categorical variables, respectively.

Results: Twenty-three patients were in the ERAS cohort vs. 23 in the traditional pain control cohort. Baseline demographics are stated in Table 1. There was a statistically significant difference in average postoperative nursing pain scores between the ERAS and traditional cohorts (2.2 vs. 3.1, $p<0.04$), as well as a significant difference in average postoperative MEs received (11.8 vs. 24.8, $p<0.03$). Thirteen patients in the ERAS cohort received an opioid prescription for home compared to 18 in the historical cohort (56.5% vs. 78.3%, $p=0.21$). There was no significant difference in length of hospital stay between the ERAS and traditional cohorts (1.04 vs. 1, $p=0.16$). No adverse patient events resulted from the block.

Conclusions: An ERAS pathway centered on a preoperative ESP block is potentially effective in lowering nursing pain scores postoperatively and decreasing MEs received. Future studies with larger cohorts are warranted.

Abstract 75. Table 1. Baseline characteristics

	Traditional pain control	ERAS	p
Age	66.8	62.7	0.16
BMI	31.1	32	0.34
Stone burden (mm)	28.7	34	0.07
Stone density (HU)	900.7	923.6	0.42
History of chronic pain*	4/23 (17%)	7/23 (30%)	0.49
ASA class	2.7	2.7	>0.99

*History of documented chronic pain but not taking an opioid as a home medication.

Abstract 76

A machine-learning model to determine calcium vs. non-calcium stone composition

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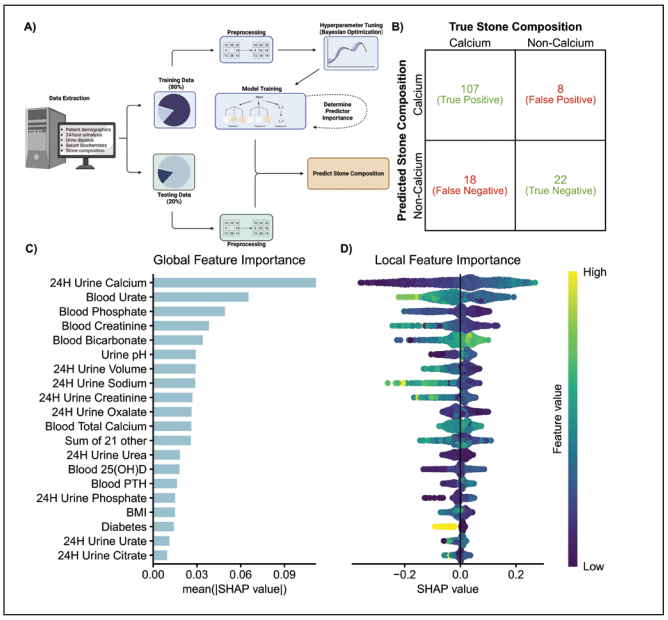
Introduction: Surgical treatment modalities, as well as dietary and medical prevention strategies for urolithiasis depend on stone composition; however, stone composition is often unknown until the stone is passed. Stone composition also reflects specific physiological parameters present during its formation and determining these factors may lead to an improved understanding of the pathophysiology of stone disease. As such, we sought to develop a machine-learning model to predict calcium vs. non-calcium stones based on clinical and demographic data from stone formers.

Methods: Stone composition, 24-hour urine results, serum biochemistry, and patient demographics were prospectively collected from calcium (n=625) and non-calcium (n=152) stone patients at a tertiary care center metabolic stone clinic. Binary classification of calcium vs. non-calcium stone composition was performed using a gradient boosted tree algorithm (Figure 1A). This algorithm converts multiple weak learners to strong learners to better classify stone types. Class imbalance was addressed by upsampling the minority class and hyperparameters were tuned using Bayesian optimization. Model performance was evaluated using kappa score and the influence of each predictor variable was assessed using Shapley Additive Explanation (SHAP) values.

Results: The model successfully differentiated stone types with a kappa of 0.5231. The model had a good degree of sensitivity of 0.86 and a moderate degree of specificity of 0.73 (Figure 1B). The model demonstrated that 24-hour urine calcium, blood urate, and blood phosphate were the most significant predictors of stone classification (Figure 1C). Specifically, higher levels of 24-hour urine calcium and lower levels of blood urate and blood phosphate are indicative of calcium-based stones (Figure 1D).

Conclusions: We demonstrated that patient demographic and clinical data can be leveraged to predict stone composition. This model may help urologists determine whether a patient has calcium or non-calcium stones and guide their management plan. Moreover, the model provides a better understanding of the key clinical features of stone disease, which sheds light on the underlying pathophysiology. By extending machine learning algorithms, it is possible to determine specific compositions of stones and will ultimately improve medical therapy for stone formers.



Abstract 76. Figure 1.

Abstract 77

Post-HoLEP voiding symptom improvement is delayed among patients self-identified as incontinent preoperatively

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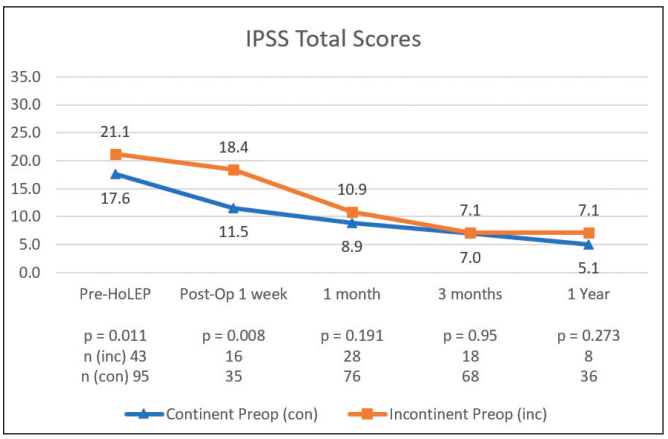
Introduction: Many patients who undergo holmium laser enucleation of the prostate (HoLEP) have some level of preoperative incontinence. It is uncertain how preoperative continence status informs voiding symptoms post- HoLEP. This study aimed to describe the difference between these cohorts' voiding symptoms using the International Prostate Symptom Score (IPSS) over the year following HoLEP.

Methods: This was a single-institution, retrospective review of patients who underwent pre-HoLEP evaluation between November 16, 2020, and March 15, 2023; 170 of these patients underwent HoLEP. During preop evaluation, patients were asked about their continence status. Those who stated they were incontinent of urine were classified as "incontinent" and those who said they were continent were classified as "continent." All participants completed the IPSS prior to HoLEP and then at one week (1w), one month (1m), three months (3m), and one year (1y) post-HoLEP. Student t-test was used to determine statistical significance of normally distributed data.

Results: A total of 124 participants were continent and 46 were incontinent pre-HoLEP. Among continent and incontinent patients, average age at time of HoLEP was 70.74 and 71.72, respectively (p=0.436), and average prostate size measured by ultrasound or axial imaging was 109.31 g and 122.81 g, respectively (p=0.107). Pre-HoLEP, incontinent patients had higher total IPSS scores than continent patients (average 21.14 vs. 17.6, p=0.01). At 1w, patients who were incontinent pre-HoLEP had significantly worse total IPSS scores compared with those where continent pre-HoLEP (average 18.38 vs. 11.54, p=0.008), although both groups demonstrated improvement. At 1m and 3m, IPSS total scores demonstrated continued improvement in both groups with loss of statistical significance between groups at 1m. At 1y, those continent pre-HoLEP demonstrated continued improvement.

Conclusions: Patients continent pre-HoLEP demonstrate significantly improved voiding symptoms at the 1wk time point compared with the more modest improvement seen by patients incontinent pre-HoLEP; however, the symptom profile between these cohorts continues to improve and statistical significance between the groups is lost at the 1m time point.



Abstract 77. Figure 1. IPSS total scores.

Abstract 78

HoLEP preoperative prostate gland size has minimal impact on operative and perioperative outcomes

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Introduction: Holmium laser enucleation of the prostate (HoLEP) is a gland size agnostic surgery option for management of benign prostatic hyperplasia (BPH). HoLEP is offered for all prostate sizes including very big (>150 mL), big (80–150mL), medium (30–80 mL), and smaller. This retrospective study compared HoLEP intraoperative and postoperative metrics by prostate sizes.

Methods: Data were queried from a consented and prospectively maintained database for patients with BPH who underwent HoLEP between November 2020 and April 2023 at a single institution with two surgeons. Variables were non-parametrically analyzed using median and interquartile ranges for continuous variables, and proportions were obtained for count data. The Kruskal-Wallis test was used to compare continuous variables among prostate size categories. A Chi-squared test was used to compare count data, except for postoperative catheter duration, where the Fisher's exact test was used due to low count in the very big category. P-values were reported with a predetermined alpha of 0.05. Statistical analyses were performed with R version 4.3.0.

Results: The study included 193 consecutive patients who underwent HoLEP, of which 32 had very big prostates, 124 were big, and 37 were medium. Baseline, operative, and outcome descriptive statistics are reported in Tables 1, 2, and 3, respectively. Preoperative metrics were not significantly different among size groups except for prostate size (as expected) and preoperative catheter use, which was more prevalent in larger prostates. Enucleation time appeared to be greater in the very big prostate group (p=0.03), whereas laser and morcellation times tended to increase with increasing prostate size (p<0.01). Outcome metrics did not significantly differ among size groups.

Conclusions: This study characterizes surgical and postoperative metrics for HoLEP at a single institution performed on patients with varying prostate sizes. While we did find a significant difference in operative characteristics, we do not feel that these are clinically significant and do not alter case length bookings based on preoperative size assessment.

Abstract 78. Table 1. Baseline characteristics

	Very big (n=32)	Big (n=124)	Medium (n=37)	p
Age (years)	72 [68–77]	70 [65–75]	69 [66–75]	0.3706
Prostate size (mL)	169.5 [157.4–189.2]	106.5 [92.2–121.5]	69.9 [64.0–72.3]	–
Preop incontinence (Y/N)	11 (34.4%)	35 (28.2%)	10 (27%)	0.7577
Preop catheter (Y/N)	22 (68.8%)	53 (42.7%)	14 (37.8%)	0.0167

Abstract 78. Table 2. Operative characteristics

	Very big (n=32)	Big (n=124)	Mid (n=37)	p
Operative time (min)	139.0 [105.2–166.2]	111 [88–146]	111.0 [82.5–158.0]	0.0748
Enucleation time (min)	96.0 [80.0–112.8]	78.0 [60.5–94.0]	80.0 [53.8–97.0]	0.0332
Laser time (min)	51.3 [47.3–62.3]	41.2 [35.0–50.1]	36.1 [29.0–45.0]	<0.0001
Morcellation time (min)	19.5 [15.8–35.0]	14 [9–18]	6.0 [4.5–10.5]	<0.0001

Abstract 78. Table 3. Outcome measures

	Very big (n=32)	Big (n=124)	Mid (n=37)	p
Retention (Y/N)	1 (3.7%)	9 (8.1%)	3 (9.1%)	0.8343
Catheter duration (days)	13 [13–13]	5 [2–6]	5.0 [4.5–5.5]	0.2705
Postop hematuria (Y/N)	16 (64.0%)	77 (72.6%)	21 (63.6%)	0.5001

Abstract 79

Establishing a connection between birth weight and nephrolithiasis among adult stone formers

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Introduction: Low birth weight is associated with up to a 10-fold reduction in nephron counts, leading to adult-onset chronic kidney disease. Premature, low-birth-weight infants may experience hypercalciuria with stone formation. Despite strong associations between chronic kidney disease and nephrolithiasis, no studies have investigated the relationship between birth weight and nephrolithiasis among adults. We hypothesize that low birth weight correlates with 24-hour urine study parameters known to be associated with nephrolithiasis.

Methods: This study is an IRB-approved (SUNY IRB: 1381875), retrospective review of the first 24-hour urinalysis between 2003 and 2020 among calcium stone-forming adults. Patients were contacted via telephone to complete a questionnaire regarding prior stone events and past medical, surgical, birth, and family history. Birth weight was stratified as low, normal, or high based on American College of Obstetricians and Gynecologists (ACOG) criteria of 2500 to 4000 grams. ANOVA with Tukey HSD post-hoc testing was performed between birth weight categories using SPSS 26.

Results: A total of 291 patients were contacted with 103 responses (35.7%). The 63 (21.6%) patients who could provide complete birth history were included. BMI and 24-hour urine oxalate levels were statistically higher in patients with high birth weight as compared to patients with low birth weight ($p<0.05$ and $p=0.017$). No difference was found among any other pairwise comparison of the study variables.

Conclusions: Low birth weight stone formers had lower BMI and 24-hour urinary oxalate levels compared to high-birth-weight stone formers. It remains unclear if there is a causal relationship between birth weight and these parameters; however, the positive association between BMI and urinary oxalate may be related to diet. Further prospective studies with higher power are needed to determine if a relationship exists between birth weight and kidney stone risk.

Abstract 79. Table 1. Birth weight and kidney stone parameters

	Birth weight					
	Low (n=8)		Normal (n=47)		High (n=8)	
Gender						
Male	1		12		4	
Female	7		35		3	
Race						
White	5		34		5	
Unknown/Other	3		13		2	
Number of stone events						
1	2		6		2	
2	1		9		0	
>2	5		32		6	
Number of stone surgeries						
0	4		8		0	
1	2		19		1	
2	0		7		2	
>2	2		12		3	
Age (yr), mean (±SD)	55	(±13)	54	(±15)	64	(±15)
BMI (kg/m2)*	30	(±6)	28	(±5)	38	(±2)
Vol24 (L)	1.48	(±0.58)	1.76	(±0.77)	1.40	(±0.58)
Ca24	260	(±89)	217	(±112)	189	(±68)
Ox24*	25	(±7)	32	(±11)	45	(±30)
Cit24	563	(±231)	602	(±432)	697	(±192)
UA24	1	(±0)	1	(±0)	1	(±0)
pH	6	(±0)	6	(±1)	6	(±0)
Na24	185	(±89)	176	(±85)	192	(±104)
K24	43	(±21)	52	(±21)	56	(±17)
Mg24	98	(±32)	93	(±34)	106	(±33)
P24	1	(±0)	1	(±0)	1	(±0)
Nh424	36	(±14)	35	(±14)	37	(±20)
Cl24	180	(±94)	167	(±78)	191	(±111)
Sul24	33	(±19)	37	(±16)	38	(±24)
UUN24	10	(±5)	10	(±4)	10	(±5)

*$p<0.05$ for low vs. high birth weight.